

Fracture behaviour of tropical hardwood under tensile load

Abstract

This paper reports on the fracture behavior of a hard wood known as Selanga Batu (*Shorea* spp) with different structure under tensile stress at various strain rates (10-100mm/min). It was found that the structure had significant effect on the modulus of elasticity and yield strength of the wood. Wood with high percentage of ray parenchyma exhibited lower modulus of elasticity and yield strength. Ray parenchyma in wood acted as the weakest plane for crack to propagate in a step-wise manner. However, large variation found in test results make it not possible to evaluate whether the strain rate affects the ultimate strength and the fracture strain. Since the values of the modulus of elasticity obtained at a given strain rate had very small variation, the effect of strain rate on the modulus of elasticity and yield strength could be examined. It was found that the strain rate did not affect the modulus of elasticity and the yield strength of the wood.